UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,816	10/07/2004	Ching-Hai Hung	IFTP0005USA	5815

27765 7590 05/29/2009
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION
P.O. BOX 506
MERRIFIELD, VA 22116

EXAMINER	
BIRKHIMER, CHRISTOPHER D	

ART UNIT	PAPER NUMBER
2186	

NOTIFICATION DATE	DELIVERY MODE
05/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

winstonhsu.uspto@gmail.com
Patent.admin.uspto.Rcv@naipo.com
mis.ap.uspto@naipo.com.tw

Office Action Summary	Application No.	Applicant(s)
	10/711,816	HUNG, CHING-HAI
	Examiner	Art Unit
	CHRISTOPHER D. BIRKHIMER	2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The current Office Action is in response to the Amendment submitted 02/06/2009. The Examiner acknowledges the amendments to claims 1, 3 – 12, 15 – 16, and 18 – 21 along with the addition of claims 23 - 24. Claims 1 – 24 are currently pending in the case

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims **1, 3, 7, 11 - 14, 19 - 21, and 23 - 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al (Pat 6,467,023) in view of Randall et al. (Pat 6,530,031).

With regard to **claim 1**, DeKoning teaches a method for redundant array of independent disks (RAID) **[100, Fig 1; Column 5, Lines 19 - 21]** consistency initialization **[Fig 3 and Fig 4]** comprises:

creating a RAID **[100, Fig 1; Column 5, Lines 19 - 21]**, including setting a RAID configuration of the RAID **["configuration information", Column 3, Lines 34 – 41]** and storing progress states of the initialization of the RAID **[300, 302, 304, 306, 307, Fig 3, This describes the function of storing the state of the initialization of the LUN for the RAID system]**, wherein after the initialization is started and before the consistency initialization **[Fig 3 and Fig 4]** is completed, the RAID **[100, Fig 1; Column 5, Lines 19 – 21]** is allowed to be accessed while the consistency initialization is in progress **[Column 3, Lines 41 – 43]**.

However, DeKoning does not specifically disclose the limitation of creating an initialization progress table for storing progress states of the initialization, wherein the initialization progress table includes a plurality of fields, each of which is used to record whether a regional initialization is performed on an initialization region, wherein after the initialization progress table is created and before the consistency initialization is completed the RAID is allowed to be accessed while the consistency initialization is in progress.

Randall discloses creating an initialization progress table **[500, Fig 5]** for storing progress states **[502, 504, and 506, Fig 5, Each item in the table is a progress indicator]**; wherein the initialization progress table **[500, Fig 5]** includes a plurality of fields **[502, 504, and 506, Fig 5]**, each of which is used to record whether a regional initialization is performed on an initialization region

[Column 4, Lines 55 – 58; 500, Fig 5, Each entry in a row is an indication of an initialization and what state the initialization is in], wherein after the initialization progress table is created **[500, Fig 5]** and before the consistency initialization is completed the RAID is allowed to be accessed while the consistency initialization is in progress **[DeKoning, Column 3, Lines 41 – 43; Randall, Fig 5; This teaches the table is created when initialization is started and that the storage system can also be accessed while the system is still in an initialization mode]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of Randall in DeKoning, because it allows the system to maintain multiple indications of initialization and allows the system to resume from multiple initialization steps and at the progress level the initialization was at when it was halted and the table of Randall provides data that allows the user of the system to determine if there are problems with the system automatically **[Column 2, Lines 19 - 29]**.

With regard to **claim 3**, DeKoning teaches detecting, when the RAID receives an I/O **[“PROCESS I/O REQUEST”, Fig 4]**, whether the initialization region that is associated with the I/O has completed the regional initialization **[405, Fig 4]**;

initializing the initialization region first if the initialization region has not completed the regional initialization **[408, Fig 4, This shows the next step performed from 405 when the initialization for the given region is not**

completed is that the initialization is completed for the given region to generate new redundancy information].

With regard to **claim 7**, DeKoning teaches the step of performing a consecutive consistency initialization **[Fig 3 and Fig 4]** on the initialization regions that have not yet completed the regional initialization **[Fig 3, The figure shows that initialization starts at the beginning of the LUN and ends once it has initialized the whole LUN]**.

With regard to **claim 11**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** further comprises a consecutive consistency initialization **[Fig 3, he figure shows that initialization starts at the beginning of the LUN and ends once it has initialized the whole LUN]** and after the initialization progress is created, the consecutive consistency initialization **[Fig 3, The figure shows that initialization starts at the beginning of the LUN and ends once it had initialized the whole LUN]** is allowed to be start anytime **["CHECKPOINT RESTART", and 316, Fig 3; Column 8, Lines 30 – 38, This shows that once the initialization progress is created the consecutive initialization is allowed to start]**.

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

With regard to **claim 12**, DeKoning teaches the RAID **[100, Fig 1; Column 5, Lines 19 - 21]** is allowed I/O accessing **[Column 3, Lines 50 – 53]** before the consecutive consistency initialization **[Fig 3]**.

With regard to **claim 13**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** comprises dividing a data space of member disks **[108, Fig 1]** into a plurality of initialization regions **[“PORTION”, 300 and 310, Fig 3]** and performing the regional initialization **[“PORTION”, 300, 302, 304, 306, 307, 308, and 310, Fig 3]** on the initialization regions **[“PORTION”, 300, 302, 304, 306, 307, 308, and 310, Fig 3]**.

With regard to **claim 14**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** comprises dividing a data space of member disks **[108, Fig 1]** into a plurality of initialization regions **[“PORTION”, 300 and 310, Fig 3]** and performing the regional initialization on the initialization regions **[“PORTION”, 300, 302, 304, 306, 307, 308, and 310, Fig 3]**.

With regard to **claim 19**, DeKoning teaches if a member disk failed and a new member disk **[Column 9, Lines 60 – 62]** is used to perform a rebuilding of the RAID **[100, Fig 1; Column 5, Lines 19 - 21]** before the completion of the consistency initialization **[Column 9, Lines 55 – 58]**, the rebuilding only has to perform on the regions which have been completed with the consistency initialization and the rebuilding on the regions which have not been completed with the consistency initialization can be performed by the consistency initialization **[308 and 312, Fig 3; 502 and 504, Fig 5; Column 10, Lines 1 – 11, This shows the rebuilding is done on the redundancy information affected by the replace which would only include initialized regions and then the LUN is marked as fully initialized once initialization is complete]**.

With regard to **claim 20**, DeKoning teaches when an I/O operation **["PROCESS I/O REQUEST", Fig 4]** accesses the RAID **[100, Fig 1; Column 5, Lines 19 - 21]** is a read operation **[The I/O request indicates both read and write requests]**, and the initialization region of the RAID **[100, Fig 1; Column 5, Lines 19 - 21]** to be accessed by the I/O has not been initialized yet **[405 and 407, Fig 4]**, no consistency initialization is performed on the initialization region **[407, Fig 4]**, and a value of zero or a predetermined value will be returned directly **[407, Fig 3, The I/O request is a predetermined value since it is the same I/O request at the beginning of the process and not a newly determined I/O request. The predetermined I/O request is returned directly to a queue to be processed later]**.

With regard to **claim 21**, DeKoning teaches a RAID **[100, Fig 1; Column 5, Lines 19 - 21]** performs an I/O operation **["PROCESS I/O REQUEST", Fig 4]** and causes an induced consistency initialization **[408, Fig 4; Column 9, Lines 11 – 18, The claim does not require that the updated initialization will not be written into the memory disks again due to a completion of the I/O operation since it is dependent on a particular outcome of a conditional statement. If the particular outcome is not met then the limitation of the updated initialization will not be written into the memory disks again due to a completion of the I/O operation is not required and DeKoning reads on the other outcome of the conditional statement not listed in the claim]**.

With regard to **claim 23**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** comprises steps of:

detecting, when the RAID **[100, Fig 1; Column 5, Lines 19 - 21]** receives an I/O, whether one of the initialization regions that are associated with the I/O has not been started with the regional initialization **[406 and 407, Fig 4]**;

performing the regional initialization on said initialization region first if said initialization region has not yet started the regional initialization **[302, Fig 3; 408, Fig 4, The redundancy information is the initialization of a region]**.

With regard to **claim 24**, DeKoning teaches of performing a consecutive consistency initialization **[Fig 3 and Fig 4]** on the initialization regions that have not yet completed the regional initialization **[Fig 3, The figure shows that initialization starts at the beginning of the LUN and ends once it has initialized the whole LUN]**.

4. Claims **2, 4 – 6, 18, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al (Pat 6,467,023) in view of Randall et al. (Pat 6,530,031) as applied to claim 1 above, and further in view of TechTarget ("Nonvolatile Storage").

With regard to **claim 2**, DeKoning teaches the RAID configuration is stored in a random access memory **[118, Fig 1; Column 5, Lines 64 – 66; Column 6, Lines 1 – 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation of non-volatile memory to store data.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

With regard to **claim 4**, DeKoning teaches the steps of:

detecting, when the RAID receives an I/O **[“PROCESS I/O REQUEST”, Fig 4]**, whether the initialization region(s) that is(are) associated with the I/O is(are) completed with the regional initialization **[405, Fig 4]**;

waiting for completion of the regional initialization if the initialization region(s) is(are) not completed with the regional initialization **407, Fig 4; Column 9, Lines 21 – 23]** and the regional initialization is being performed on the initialization region(s) that is(are) associated with the I/O **[405, Fig 4; Column 9, Lines 9 – 21, If the request is above and below the boundary that indicates that the regional initialization has started but is not complete for the region the I/O is associated with]**;

updating an initialization state change of the initialization region(s) **[Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]**;

writing the updated initialization state change into a memory device **[Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** before an I/O result is returned **[Column 8, Lines 30 – 38; Fig 3; This shows the updated**

initialization state change information is saved before an I/O result is returned which is in response to an I/O input to restart the initialization].

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation that the memory the updated initialization changed are written to is a non-volatile memory.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

With regard to **claim 5**, DeKoning teaches wherein the I/O accesses the RAID **[100, Fig 1; Column 5, Lines 19 – 21]** after the step of writing the updated initialization into the memory device **[Column 7, Lines 12 – 23, This shows the I/O accesses the RAID before and after a particular update to the progress data since the initialization and I/O accesses are performed in parallel]**.

Randall discloses the use of a table to store initialization information **[500, Fig 5]**.

TechTarget discloses the memory is non-volatile memory **[Page 1]**.

With regard to **claim 6**, DeKoning teaches wherein the I/O accesses the RAID **[100, Fig 1; Column 5, Lines 19 – 21]** before the step of writing the updated initialization into the memory device **[Column 7, Lines 12 – 23, This shows the I/O accesses the RAID before and after a particular update to the progress data since the initialization and I/O accesses are performed in parallel]**.

Randall discloses the use of a table to store initialization information **[500, Fig 5]**.

TechTarget discloses the memory is non-volatile memory **[Page 1]**.

With regard to **claim 18**, DeKoning teaches there are a plurality of versions of the initialization progress **[307, Fig 3, Each save would result in different version of data]** stored in the memory device **[118, Fig 1; Column 5, Lines 64 – 66; Column 6, Lines 1 – 5]**.

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

With regard to **Claim 22**, TechTarget discloses the memory device is a battery backed-up SRAM, a flash RAM **[Page 1]** or a disk drive except a member disk.

5. Claims **8 - 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al (Pat 6,467,023) in view of Randall et al. (Pat 6,530,031) as applied to claim 7 above, and further in view of TechTarget ("Nonvolatile Storage").

With regard to **claim 8**, DeKoning teaches the consecutive consistency initialization **[Fig 3 and Fig 4]** comprises steps of:

selecting on of the initialization regions **["PORTION", 300 and 310, Fig 3]** which have not yet completed the regional initialization **[310, Fig 3]**;

performing the regional initialization **["PORTION", 300, 302, 304, 306, 307, 308, and 310, Fig 3]** on the initialization region **[308, 310, and 302, Fig 3]** if a regional initialization **["PORTION", 300, 302, 304, 306, 307, 308, and 310, Fig 3]** is not already being performed on the selected initialization region **["PORTION", 300 and 310, Fig 3, The figure shows the process of performing initialization on regions if the initialization has not occurred already until all regions have been initialized]**;

updating an initialization state change of the selected initialization region **[307, Fig 3]**;

writing the updated initialization progress into the memory device **[118, Fig 1; Column 5, Lines 64 - 67; Column 6, Lines 1 - 5]** when the regional initialization is performed at a suitable time, wherein the suitable time is a timing when a predetermined number of initialization regions is completed with the regional initialization **[307, Fig 3; Column 5, Lines 64 – 67; Column 6 – Lines 1 – 5, This shows the updated initialization progress is saved to the random**

access memory device at a suitable time which is after each portion's initialization process is complete. The predetermined number of initialization regions is one since after each region is initialized the progress is saved to the memory device], when a predetermined percentage of the initialization regions is completed with the regional initialization, or when a predetermined time has elapsed after the initialization progress is stored in a member disk;

repeating aforesaid steps until initialization regions **["PORTION", 300 and 310, Fig 3]** have completed the regional initialization **[308 and 312, Fig 3]**.

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation that the memory the updated initialization changed are written to is a non-volatile memory.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

With regard to **claim 9**, DeKoning teaches after all the initialization regions have completed regional initialization **[308 and 312, Fig 3]**, step of writing a state which shows that all initialization regions **["PORTION", 300 and 310, Fig 3]** are completed with initialization **[312, Fig3]** into the memory device **[Column 5, Lines 64 – 66; Column 6, Lines 1 – 5]**.

TechTarget discloses the use of a non-volatile memory **[Page 1]**.

With regard to **claim 10**, DeKoning teaches the consecutive consistency initialization **[Fig 3 and Fig 4]** comprises the steps of:

performing a regional initialization priority adjustment mechanism to determine whether selecting of the initialization regions **["PORTION", 300 and 310, Fig 3]** which has not yet been completed with the regional initialization **["PORTION", 300 and 310, Fig 3]**;

selecting one of the initialization regions **["PORTION", 300 and 310, Fig 3]** which have not yet been completed with the regional initialization **[310, Fig 3]**;

performing the regional initialization **["PORTION", 300, 302, 304, 306, 307, 308, and 310, Fig 3]** on the selected initialization region **[308, 310, and 302, Fig 3]** if the regional initialization **["PORTION", 300, 302, 304, 306, 307, 308, and 310, Fig 3]** is not being performed on the selected initialization region **["PORTION", 300 and 310, Fig 3, The figure shows the process of performing initialization on regions if the initialization has not occurred already until all regions have been initialized]**;

updating an initialization state change of the selected initialization region **[307, Fig 3]**;

writing the updated initialization progress data into a memory device, **[118, Fig 1; Column 5, Lines 64 - 67; Column 6, Lines 1 - 5]** when the regional initialization is performed at a suitable time, wherein the suitable time is a timing when a predetermined number of initialization regions is completed with the regional initialization **[307, Fig 3; Column 5, Lines 64 – 67; Column 6 – Lines 1 – 5, This shows the updated initialization progress is saved to the random access memory device at a suitable time which is after each portion's initialization process is complete. The predetermined number of initialization regions is one since after each region is initialized the progress is saved to the memory device]**, when a predetermined percentage of the initialization regions is completed with the regional initialization, or when a predetermined time has elapsed after the initialization progress is stored in a member disk;

repeating aforesaid steps until initialization regions **["PORTION", 300 and 310, Fig 3]** have completed the regional initialization **[308 and 312, Fig 3]**.

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation that the memory the updated initialization changed are written to is a non-volatile memory.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

6. Claims **15 - 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al (Pat 6,467,023) in view of Randall et al. (Pat 6,530,031) as applied to claim 3 above, and further in view of TechTarget ("Nonvolatile Storage").

With regard to **claim 15**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** comprises dividing a data space of member disks **[108, Fig 1]** into a plurality of initialization regions **["PORTION", 300 and 310, Fig 3]** and performing the regional initialization on the initialization regions **["PORTION", 300, 302, 304, 306, 307, 308, and 310, Fig 3]**, and after the I/O that induces the regional initialization completes access to a data space of the RAID, the initialization progress data is written into a memory device, and then an I/O result is returned **[Figs 3 – 4; Column 5, Lines 54 – 67; Column 6, Lines 1 – 5; Column 9, Lines 9 – 17, This shows the process of an I/O request being receive that is for access to a section of memory not initialized section of memory which then forces the desired memory location to perform**

initialization and due to the initialization the progress is saved in a random access memory and then the return of the I/O is if the entire LUN is initialized or not].

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation of non-volatile memory to store data.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

With regard to **claim 16**, DeKoning teaches the consistency initialization **[Fig 3 and Fig 4]** comprises dividing a data space of member disks **[108, Fig 1]** into a plurality of initialization regions **[“PORTION”, 300 and 310, Fig 3]** and performing the regional initialization on the initialization regions **[“PORTION”, 300, 302, 304, 306, 307, 308, and 310, Fig 3]** and after the initialization progress is first written in to a memory device **[118, Fig 1; Column 5, Lines 64 – 66; Column 6, Lines 1 – 5]**, an I/O **[“INITIALIZE LUN”, Fig 3]** accesses the data

space of the RAID **[Fig 3; 404 and 406, Fig 4, This shows an I/O request that is granted access to the data space of the RAID when the data space requested by the I/O request is above the boundary line which means the initialization for the data space has already happened wish then also means the progress data for that data space has been saved to memory]**.

Randall discloses the use of a table to store initialization state data **[500, Fig 5]**.

However, DeKoning in view of Randall does not specifically disclose the limitation of non-volatile memory to store data.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of TechTarget in DeKoning in view of Randall, because DeKoning is using a random access memory to store the progress of the initialization **[DeKoning, Column 5, Lines 64 – 67; Column 6, Lines 1 – 5]** and TechTarget discloses a random access memory that has non-volatile storage characteristics that would allow the progress of the initialization to be saved even if the power to the system was interrupted **[TechTarget, Page 1]**.

7. Claim **17** is rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning et al (Pat 6,467,023) in view of Randall et al. (Pat 6,530,031) in view of TechTarget ("Nonvolatile Storage") as applied to claim 2 above, and further in view of Humlicek et al. (Pat 5,822,782).

With regard to **claim 17**, DeKoning teaches the RAID configuration is stored in a random access memory **[118, Fig 1; Column 5, Lines 64 – 66; Column 6, Lines 1 – 5]**.

TechTarget discloses the use of non-volatile memory to store data **[Page 1]**.

However, DeKoning in view of Randall in view of TechTarget does not specifically disclose the limitation that the non-volatile memory is a member disk.

Humlicek discloses a RAID system that stores configuration information on the disk drives **[Column 6, Lines 52 - 62]**.

It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the teachings of Humlicek in DeKoning in view of Randall in view of TechTarget, because there is a limited number of non-volatile type memories and both a memory disk from Humlicek and the memory disclosed by TechTarget provide examples of non-volatile member and it would be a design choose as to which type of non-volatile memory to store the data and both would be expected to provide the same property of retaining the memory once the main power source is removed from the system.

Response to Amendment/Arguments

8. The Examiner has introduced the Randall et al. (Pat 6,530, 031) and TechTarget (“Nonvolatile Storage”) to teach multiple amended limitations in the claims.

9. Applicant's arguments filed 02/06/2009 and 09/25/2008 with regard to the 35 U.S.C. 103(a) rejections of claims 1 – 22 have been fully considered but they are not persuasive.

The Applicant summarizes their arguments on pages 15 - 17 arguing

- First, that DeKoning fails to teach or suggest a table that is used to tell un-initialized portions from initialized portions,
- Second, an induced initialization on un-initialized regions,
- Third, the applicant uses less software,
- Fourth, the table is not obvious as previous stated.
- Fifth, claim 3 is allowable for containing allowable subject matter and being dependent on claim 1

After careful consideration of the Applicant’s arguments the Examiner respectfully disagrees with the Applicant.

The first argument is moot as the Examiner has introduced the Randall reference to teach a table that is used to store initialization data in a RAID system. Also, the progress data stored by DeKoning is what is an indication of the boundary marker which indicates above the boundary is initialized and below the boundary is un-initialized.

For the second argument figure 4 shows in steps 406 and 407 an I/O request that induces initialization on a region of memory before it is initialized from the original initialization process. The initialization process in figure 3 shows that the initialization is performed by creating redundancy information which. Redundancy information is created in figure 4 in 408 because the request is below the current initialization boundary so it stats an induced initialization process on that desired memory location.

For the third argument there is no requirement of software programs in the claims. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., a limited number of software programs) is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The fourth argument is moot in view of the Randall reference.

For the fifth argument the Applicant arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Direction Of Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER D. BIRKHIMER whose telephone number is (571)270-1178. The examiner can normally be reached on M-H 7:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher D Birkhimer
Examiner
Art Unit 2186

/Matt Kim/
Supervisory Patent Examiner, Art Unit 2186

/Christopher D Birkhimer/
Examiner, Art Unit 2186